**HW 31H Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Inductive Reasoning, Conjectures, and Counterexample Period:\_\_\_\_\_Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**SHOW ALL WORK AND WRITE IN COMPLETE SENTENCES OR ELSE LASALLE**

Review

|  |  |
| --- | --- |
| 1. Simplify: | 1. Simplify |
| 1. Simplify: | 1. Simplify : |
| 1. Simplify: | 1. Simplify: |
| 1. Simplify: (-4 + 7i)(4i – 10) | 1. Simplify: 8*i* (-2*i* – 6) |
| 1. Simplify: |  |

**Homework 31H** Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Using a Counterexample to Show a Conjecture is False** Period:\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Find a counterexample to disprove each of the following conjectures.**

|  |  |
| --- | --- |
| **1) Conjecture:** Everything that’s hot is fried chicken. | **2) Conjecture:** English is the only language spoken in the United States. |
| **3) Conjecture:** If = , then K is the midpoint of . | **4) Conjecture:** If n is a real number then –n is a negative number. |
| **5) Conjecture:** The product of is equal to  + , for a 0 and b. | **6) Conjecture:** The square of an odd integer is even. |
| **7) Conjecture:** The monthly high temperature in Abilene is never below 90°F two months in a row.   |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | The Monthly High Temperatures for Abilene, Texas | | | | | | | | | | | | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | | 88 | 89 | 95 | 97 | 99 | 101 | 103 | 107 | 101 | 97 | 91 | 89 | | |

**Some of the following conjectures are true and some can be proven false using a counterexample. If the statement is true, write the word TRUE in the box. For statements that are false, provide a counterexample.**

|  |  |
| --- | --- |
| **8) Conjecture:** The graph of a quadratic function  y = ax2+bx+c (a noteq 0) is always a parabola. | **9) Conjecture:** A quadratic equation always has two solutions. |
| **10) Conjecture:** Every quadratic function is factorable. | **11) Conjecture:** The vertex of a parabola will always lie on the y-axis. |
| **12) Conjecture:** The number of times a quadratic equation touches the x-axis is the number of solutions that the quadratic equation will have. | **13) Conjecture:** If the “a” term of the quadratic equation is negative, the parabola will open down. |